

SIA COMMENTS TO “PROPOSED PERFORMANCE STANDARDS FOR SEMICONDUCTORS AND RELATED DEVICES”

**3rd Public Workshop
Reducing Fluorinated Gas Emissions From Semiconductor &
Related Devices Industry**

**Sacramento, CA
September 2, 2008**



Agenda

- ❖ **Lack of Transparency**
- ❖ **Overly Aggressive Expectations**
- ❖ **Cost Effectiveness**
- ❖ **Ban on SF₆**
- ❖ **Lack of Recognition for Past Efforts**

Lack of Transparency

- ❖ **What is the statistical basis for the CARB Performance Standard proposal?**
- ❖ **On what basis were specific semiconductor facilities grouped?**
- ❖ **How were costs for attaining the proposed standards determined?**
- ❖ **More detail is needed to determine the validity of CARB estimates of compliance costs?**

Overly aggressive expectations

- ❖ Original targets in the Early Action Measures were 50% reductions by 2020.
- ❖ Based on the erroneous CARB belief that additional reductions were available and cost effective, the reduction target was raised to 59% by 2012.
- ❖ Total CA GHG emissions are approximately 500 MMTCO₂E and a 169 MMTCO₂E reduction is required to meet the AB 32 goal.
- ❖ Semiconductor industry emissions were estimated to be 0.27 MMTCO₂E, or ~ 0.05 % of the total CA GHG emissions.
- ❖ A 59% reduction is only 0.016 MMTCO₂, or ~ 0.09% of the AB 32 goal.

Cost Effectiveness

- ❖ In the CARB Draft Scoping Plan, a figure of \$3 Million was estimated as the annualized cost to the CA semiconductor industry to reduce emission to 0.15 MMTCO₂E (a 50% reduction).
- ❖ Costs associated with achieving an 59% reduction are likely to be much higher and will likely exceed the CARB estimate for each effected Tier I facility .
- ❖ Initial estimates suggest a cost that is several times higher to achieve the new CARB target of 0.04 MMTCO₂E for the California semiconductor industry.
- ❖ The small benefit achieved from achieving this target does not warrant its' cost, nor, will it help CARB achieve its' goal to reduce GHG emissions by 169 MMTCO₂E by 2020 .

Ban on SF₆ for Chamber Cleaning

- ❖ SF₆ is typically used for etching, not chamber clean.
- ❖ However, the use of any of the PFC gases should be at the discretion of the user provided that effective emission control is possible and the gas does not exhibit any other property such as toxicity which would render its emission undesirable.
- ❖ A performance standard should not be used as a means of regulating the use of any gas, rather, it should be used to define the expected performance in controlling the emission of that gas.

Lack of Recognition for Past Efforts

- ❖ Proposed performance standard does not adequately reward progress made by the industry prior to 2006.
 - No credit for gains from process optimization.
 - No credit for gains from chemical substitution.
 - No credit for implementation of remote plasma in chamber cleaning.
- ❖ To exemplify this, SIA MOU participant emissions have gone from a high value of 1.49 MMTCE (5.47 MMTCO₂E) to 0.74 MMTCE (2.72 MMTCO₂E) in 2007, a reduction of 50%.

SIA Partners PFC Emissions 1995-2007

